ABSTRACT

THESIS: Floristic Inventory of the Cooper Woods—Skinner Woods Complex and a Comparison of the Woodland Structure and Composition between the Two Sites

STUDENT: Ahmed Hubini

DEGREE: Master of Science

COLLEGE: Sciences and Humanities

DATE: May 2017

PAGES: 90

Both Cooper woods (CW) and Skinner Woods (SW) are owned and managed by Ball State University and are located in Muncie IN, Delaware County. The two sites are approximately 18.8 hectares. *Floristic quality analysis:* For the two woodlands combined, 356 taxa representing 225 genera in 90 families were reported. The four families with the highest number of species were Poaceae (45), Asteraceae (38), Cyperaceae (28), and Rosaceae (20). Of the 356 documented species, 276 were native and 80 were exotic. A physiognomic analysis was provided. The FQI and mean C were 55.0 and 3.4, respectively, and the FQI and mean C for total species (native and exotic) were 48.6 and 2.6, respectively. The FQI and mean C indicated that the complex is of nature preserve quality, but the decreased in the value for the mean C suggests that the exotics are having a negative impact on the native flora. No species occur on the Indiana Department of Natural Resources list of endangered, threatened or rare plants, but two species, *Rudbeckia fulgida* var. *fulgida* and *Spiranthes ovalis* var. *erostellata*, are on the state watch list. Similar results were obtained for CW and SW individually. *Woody plant analysis:* Twenty-four 15 m plots were established in SW; plot centers were 30 m apart. Data collected at each plot included species name, distance from the plot center in m, azimuth, diameter at breast height

(dbh), and tree health. Trees were placed in three size classes (dbh > 20 cm, dbh > 10 cm but ≤ 20 cm, and dbh > 5 cm but ≤ 10 cm. Results indicate that prior to the introduction of the emerald ash borer, SW was a Midland hardwood forest dominated by ash, oak, and hickory, but following its introduction, the ash are nearly gone. Similar results were found in CW (data provided by Dr. Kem Badger). Currently, the RIV for all species of *Carya* and *Quercus* combined was nearly identical for both sites, i.e., 72 for SW versus 69 for CW. However, *Carya* spp. had a higher RIV at SW (29) then at CW (17). Analysis of the two smaller size classes suggests that the forest will change composition over time from the current oak-hickory dominated woodland to a sugar maple-hickory dominated forest.